Discoveries in Public Health
Publication of the Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria. (All rights reserved © 2022)

Volume 1 June, 2022 - pp 19-22

COVID-19 Pandemic and Water Supply Services in the Greater Banjul Area, The Gambia

Samba Camara[1], **Buba Bah**[1], **Lamin F. Barrow**[1], **Lamin M. Ceesay**[1], and **Bambo Bayo**[2]
[1]Department of Public and Environmental Health, School of Medicine and Allied Health Sciences, University of The Gambia. Brikama Campus P. O. Box 3530, The Gambia.
[2]Department of Geography School of Arts and Sciences, University of The Gambia. Brikama Campus, The Gambia
Corresponding Author Email: scamara@utg.edu.gm

Abstract
In March 2020, The Gambia registered its first COVID-19 case. Since then, the government and its partners have taken series of public health measures, which includes self-isolation, keeping physical distances, use of face masks, trade and travel restrictions, and advocacy for water, sanitation, and hygiene (WASH) services in homes and public places. These measures impacted lives and livelihoods in The Gambia, including water supply services. The Greater Banjul Area, where a majority of the population depends on municipal water for domestic use experienced an increased demand for water due to improved sanitation and hygiene measures. GBA occupies 16% of the land area and accounts for more than 50% of the country's population. This high population density and human activity in GBA promotes the high transmission rates of COVID-19. Thus increasing the demand for water supply services. During the peak of COVID-19 in The Gambia, water quality in the Kanifing Municipality water samples collected from Fajara Water Treatment Plant were analyzed for field parameters using the spectrophotometer DR6000. The results showed that pH was 6.03, Electric Conductivity 151 siemens per centimeter, Total Dissolved Solids 98 mg/l, Temperature 28.7°C, Salinity 0.07%, Residual Chlorine 0.016 mg/l, and Dissolved Oxygen was 24. In Brikama, 60 households were interviewed regarding their perception of the availability and quality of pipe-borne water. Up to 55% of the population were not satisfied with the amount of water supplied, citing odor, color, and hiking water bills with limited supplies during the peak of COVID-19 pandemic in the country. Many opted to change from the public water supply system to private or have both water source systems in their households. Therefore, to prevent the reoccurrence of water problems in COVID-19, NAWEC and the Gambia Public Utility Regulatory Authority should factor in clean and wholesome water supply in emergencies.

Keywords:
COVID-19,
Water supply services,
The Gambia,
Public Health

La Pandémie de COVID-19 et des services d'approvisionnement en eau dans la région du Grand Banjul, La Gambie

Résumé
En mars 2020, la Gambie a enregistré son premier cas de COVID-19. Depuis, le gouvernement et ses partenaires ont pris une série de mesures de santé publique, notamment l'auto-isolement, le maintien des distances physiques, l'utilisation de masques faciaux, les restrictions de commerce et de voyage et le plaidoyer en faveur des services d'eau, d'assainissement et d'hygiène (le WASH) chez eux et des lieux publics. Ces mesures ont eu un impact sur les vies et les moyens de subsistance en Gambie, y compris les services d'approvisionnement en eau. La région du Grand Banjul, où la majorité de la population dépend de l'eau municipale pour l'usage domestique, a connu une augmentation de la demande en eau en raison de l'amélioration des mesures d'assainissement et d'hygiène. La densité de la population du pays et d'activité humaine dans la dans la région du Grand Banjul, favorise les taux de transmission élevés du COVID-19, augmentant ainsi la demande de services d'approvisionnement en eau. Pendant l'epidemie de COVID-19 en Gambie, la qualité de l'eau dans les échantillons d'eau de la municipalité de Kanifing et de traitement de l'eau de Fajara a été analysée pour les paramètres de

terrain à l'aide du spectrophotomètre DR6000. Les résultats ont montré que le pH était de 6,03, la conductivité électrique de 151 siemens par centimètre, le total des solides dissous de 98 mg/l, la température de 28,7 oC, la salinité de 0,07 %, le chlore résiduel de 0,016 mg/l et l'oxygène dissous de 24. À Brikama, 60 ménages étaient interrogés sur leur perception de la disponibilité et de la qualité de l'eau courante. Jusqu'à 55% de la population n'était pas satisfaite de la quantité d'eau fournie, citant l'odeur, la couleur et la hausse des factures d'eau avec des approvisionnements limités pendant le sommet de la pandémie de COVID-19 dans le pays. Beaucoup ont choisi de passer du système public d'approvisionnement en eau au privé ou d'avoir les deux systèmes de source d'eau dans leurs ménages. Par conséquent, pour éviter le retour des problèmes d'eau dans COVID-19, la NAWEC et l'Autorité de réglementation des services publics de Gambie devraient tenir compte d'un approvisionnement en eau propre et saine en cas d'urgence.

Introduction

In March 2020, The Gambia registered its first COVID-19 case. Since then, the government and its partners have taken series of public health measures, including self-isolation, keeping physical distances, use of face masks, trade and travel restrictions and advocacy for water, sanitation, and hygiene (WASH) services in homes and public places (1). These measures impacted lives and livelihoods in The Gambia, including water supply services (1,2).

Current evidence suggests that the COVID-19 virus is transmitted via respiratory droplets or contact (3) and contact transmission ensures when contaminated hands touch the mouth, nose, or eyes (3,4). Consequently, through regular hand washing, WASH is key to controlling the spread of the COVID-19 virus (3). Therefore, the availability and access to clean and wholesome water is critical in containing the spread of COVID-19.

The Greater Banjul Area (GBA), where a majority of the population depends on municipal water for domestic use, experienced an increased demand for water due to improved sanitation and hygiene measures (1,5). GBA occupies 16% of the land area and accounts for more than 50% of the country's population. This high population density and human activity in GBA promotes the high transmission rates of COVID-19, thus increasing the demand for water supply services. However, residents are concerned about a potential increased spread of COVID-19 due to water rationing (2).

In Sub-Saharan Africa (SSA), about 300 million people live in water-stressed environments, and The Gambia is predicted to suffer economic water scarcity by 2025 (3,4,6). The water-stressed environment in The Gambia presents a major challenge in controlling the spread of COVID-19. According to the World Health Organization (WHO), the poorly developed water and sanitation systems in West Africa partly contributed to the rapid spread of the 2014 Ebola outbreak and the high mortality rate (7).

During the peak of COVID-19 in The Gambia, water quality in the Kanifing was substandard. Water samples collected from Fajara Water Treatment Plant in the Kanifing Municipality was analyzed for field parameters using the spectrophotometer DR6000. The results showed that pH was 6.03, Electric Conductivity 151 siemens per centimeter, Total Dissolved Solids 98 mg/l, Temperature 28.7°C, Salinity 0.07%, Residual Chlorine 0.016 mg/l, and Dissolved Oxygen was 24. These figures show that the pH and chlorine residuals were below the WHO standard of 6.5-8.5 and 0.3 – 0.5mg/l, respectively. It should be noted that, during the peak of COVID-19, the National Water and Electricity Company (NAWEC), which is mandated to provide municipal water supply to the Gambian population, did not have adequate chlorine supplies for disinfection of the water supplied to its people. Borders were closed with the neighboring country Senegal worsened the situation.

In Brikama, 60 households were interviewed regarding their perception of the availability and quality of pipe-borne water (Figure 1).

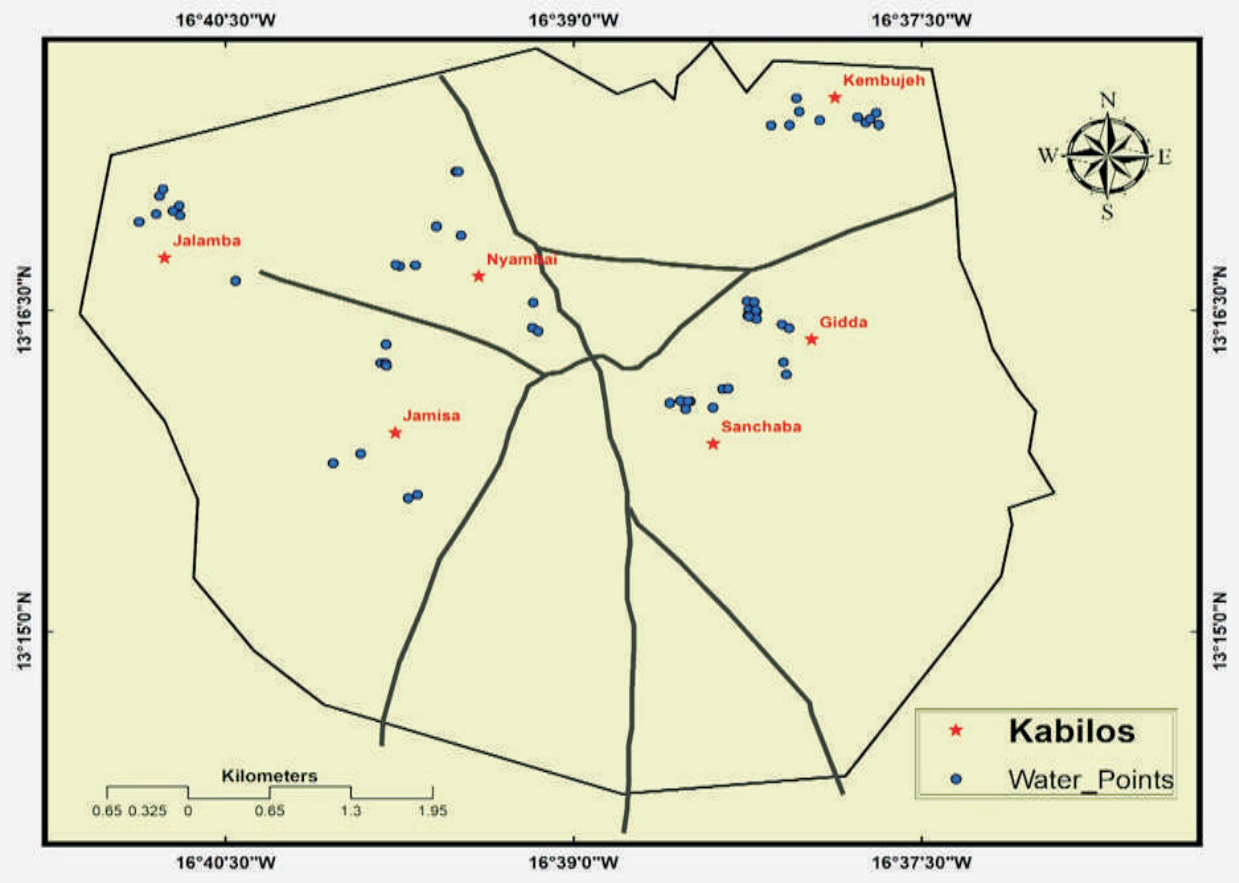

Figure 1: Households interviewed in Brikama, GBA

Up to 55% of the population were not satisfied with the amount of water supplied, citing odour, colour, and hike in water bills with limited supplies during the peak of COVID-19 pandemic in the country. Many opted to change from the public water supply system to private or have both water source systems in their households.

In response to the promotion of hand hygiene by the World Health Organization (WHO) and National Public Health agencies as means of curbing the spread of COVID-19, Municipal Water Service Providers (WSP) in most developed countries have outlined rigorous measures to ensure the continuous provision of essential water services to all during this pandemic (8,9,10). For example, WSP has suspended water shutoff with service to be temporarily restored to thousands of disconnected households in the US and Australia (9). This is an antithesis to what prevailed and continues to prevail in The Gambia; water shortages are common.

In conclusion, the low residual chlorine level in Fajara Water Station was attributed to restrictions in travel and trade as chlorine used in public water systems in The Gambia is imported (1). Again, dissatisfaction around the amount supplied was due to the high demand for water as a result of the high demand for WASH practices during the COVID-19 pandemic in The Gambia. Water scarcity (less than 1000 cubic meters per capita per year) and stress (less than 1,500 cubic meters per capita per year) reflect the lack of sufficient available water resources to meet the demand of usage within a region and the inability to meet human and ecological demand for water, respectively (11).

Adopting the green or nature-based solutions by NAWEC can be an option to help improve water storage and supply, thus increasing water availability and access. The green-based solution is needed more than ever before, considering that water shortage will worsen in Sub-Saharan Africa (SSA), especially in The Gambia, where the River Basin from where the country taps its water source is expected to decline. The decline could be due to climate change, anthropogenic activities and the risk of droughts, causing the decrease in the water levels of aquifers and fresh water supply sources (12,8). Since the ongoing COVID-19 pandemic provides an opportunity to improve water access for the population, public water supply authorities should consider public health emergencies during public water supply systems planning. To achieve this, good water governance and adequate investments are critical (13,14). In response to COVID-19, policy

measures should consider a more 'inclusive and holistic water security need. With the water demand pressures from rapid population growth and urban expansion in the GBA, there is an urgent need to increase the efficiency of municipal water supply services. Promoting the production of disinfectants locally can be ideal to ensure a clean and wholesome water supply, particularly in public health emergencies. Therefore, to prevent the reoccurrence of water problems in COVID-19, NAWEC and the Gambia Public Utility Regulatory Authority should factor in clean and wholesome water supply in emergencies to avoid repeating the problems above.

References

1. Gambia Government COVID-19 National Situation Report #1. 2020 March. Accessed April 7, 2022 https://www.moh.gov.gm/Covid-19-report/
2. Samba Camara, Buba Bah, Lamin L.F. Barrow, Muhammed Lamin Sanyang, and Evelyn Uyamadu. Groundwater Quality and Municipal Waste Management in Brikama, *The Gambia*. *AJEHS* 2021(8), November, 2021 http://www.ehsanonline.org ISSN: 2476-8030 (Prints) ISSN: 2714 -2930(Online) pp 23-31
3. Kalbusch, A., Henning, E., Brikalski, M.P., de Luca, F.V., and Konrath, A.C. (2020). Impact of Coronavirus (COVID-19) Spread-Prevention Actions on Urban Water Consumption. *Resources, Conservation and Recycling*, 163, 105098.
4. Lv B, Li Z, Chen Y. (2020). Global COVID-19 fatality analysis reveals Hubei–like countries potentially with severe outbreaks. J Infect, 14 April 163-4453(20)30157-2.
5. Gambia Bureau of Statistics (GBoS) and ICF. *The Gambia Demographic and Health Survey 2019-20*. Banjul, The Gambia and Rockville, Maryland, USA: GBoS and ICF. 2021.
6. Manel Poch, Manel Garrido-Baserba, Lluís Corominas, Antoni Perelló-Moragues, Hector Monclús, Manuel Cermerón-Romero, Nikos Melitas, Sunny C. Jiang, Diego Rosso (2020). When the fourth water and digital revolution encountered COVID-19, Science of The Total Environment, 744(1), 140980, ISSN 0048-9697, bhttps://doi.org/10.1016/j.scitotenv.2020.140980.(https://www.sciencedirect.com/science/article/pii/S0048969720345095)
7. Gambia Government. (2020). *Republic of The Gambia Ministry of Environment, Climate Change, Water Resources, Parks and Wildlife Consultancy Services for the National Water Sector Reform Studies for The Gambia Financed by the African Water Facility of the African Development Bank*. (2014 *December*, 1–29).
8. 90 US cities and states suspend water shutoffs to tackle coronavirus pandemic (2020, March 17). Retrieved from https://www.theguardian.com/world/2020/mar/16/90-us-cities-and-states-suspend-water-shutoffs-to-tacklecoronavirus-pandemic
9. Cooper, R. (2020). Here's how Australian water utilities are responding to COVID-19. Retrieved from https://watersource.awa.asn.au/business/assets-and-operations/how-australian-water-utilities-responding-Covid-19/ on 25 April 2021.
10. World Health Organization. Progress on Household Drinking Water, Sanitation and Hygiene 2000–2017. Special Focus on Inequalities. New York: United Nations Children's Fund (UNICEF) and World Health Organization; 2019 https://www.who.int/water_sanitation_health/publications/jmp report-2019/en/.
11. For people in developing countries, clean water can change everything. https://my.charitywater.org/global-water-crisis
12. Cascella M, Rajnik M, Cuomo A, Dulebohn SC, Di Napoli R. (2020). Features, evaluation and treatment of coronavirus (COVID-19). StatPearlsPublishing.https://www.stva.ncbi.nlm.nih.gov/books/NBK554776/.
13. United Nations. Peace, Dignity and equality on a Healthy Planet. http://www.un.org/en/sections/issues-depth/water/
14. The Water Crisis. http://water.org/water-crisis/water-facts/water

Publication of the Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria.
Volume 1 June, 2022 - pp 19-22

Discoveries in Public Health